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# **2010 Post-Election Voting Survey of Active Duty Military Spouses**

## **Statistical Methodology Report**

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**2010 POST-ELECTION VOTING SURVEY OF  
ACTIVE DUTY MILITARY SPOUSES:  
STATISTICAL METHODOLOGY REPORT**

**Defense Manpower Data Center**  
**Human Resources Strategic Assessment Program**  
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## Acknowledgments

Defense Manpower Data Center (DMDC) is indebted to numerous people for their assistance with the *2010 Post-Election Voting Survey of the Active Duty Military Spouses (2010 PEV7)*, which was conducted on behalf of the Office of the Under Secretary of Defense for Personnel and Readiness (OUSD[P&R]). The survey program is conducted under the leadership of Timothy Elig, Director of the *Human Resources Strategic Assessment Program (HRSAP)*.

Policy officials from the Federal Voting Assistance Program (FVAP) contributed to the development of this survey include Bob Carey, Director, Paul Drugan, Deputy Director for Research, and Alan White, Survey Specialist.

DMDC's Personnel Survey Branch, under the guidance of David McGrath, Branch Chief is responsible for the data processing, sampling, and weighting methods used in the Status of Forces and FVAP surveys program. Fawzi al Nassir, SRA International, Inc., supervised the sampling and weighting processes, and provided consultations and overall process control. The lead statistician was Owen Hung, SRA International, Inc., supported by Jeffrey Schneider and Phil Masui, DMDC who used the DMDC Sampling Tool to design the sample. They also developed weights for this survey. Susan Reinhold and Carole Massey, provided the data processing support. Fawzi Al Nassir, Jeffrey Schneider, and Phil Masui wrote this methodology report. Mary Padilla, SRA International, Inc., helped formatting this report.

# 2010 POST-ELECTION VOTING SURVEY OF ACTIVE DUTY MILITARY SPOUSES: STATISTICAL METHODOLOGY REPORT

## Executive Summary

The Uniformed and Overseas Citizens Absentee Voting Act of 1986 (UOCAVA), 42 USC 1973ff, permits members of the Uniformed Services and Merchant Marine, and their eligible family members and all citizens residing outside the United States who are absent from the United States and its territories to vote in the general election for federal offices. These groups include:

- Members of the Uniformed Services (including Army, Navy, Air Force, Marine Corps, Coast Guard),
- U.S. citizens employed by the Federal Government residing outside the U.S., and
- All other private U.S. citizens residing outside the U.S.

The Federal Voting Assistance Program (FVAP), under the guidance of USD(P&R), is charged with implementing the UOCAVA and evaluating the effectiveness of its programs. The FVAP Office asked DMDC to design, administer, and analyze post-election surveys on Uniformed Services voter participation, overseas nonmilitary voter participation, and local election officials. Without such surveys, the Department will not be able to assess and improve voter access. In addition, such surveys fulfill 1988 Executive Order 12642 that names the Secretary of Defense as the “Presidential designee” for administering the UOCAVA and requires surveys to evaluate the effectiveness of the program in presidential election years.

The objectives of the 2010 post-election surveys are: (1) to gauge participation in the electoral process by citizens covered by UOCAVA, (2) to assess the impact of the FVAP’s efforts to simplify and ease the process of voting absentee, (3) to evaluate other progress made to facilitate voting participation, and (4) to identify any remaining obstacles to voting by these citizens. Surveys were done of military members, federal civilian employees overseas, other U.S. citizens overseas, voting assistance personnel, and local election officials in the U.S.

This report focuses on the *2010 Post-Election Voting Survey of Active Duty Military Spouses (2010 PEV7)*, which was designed to capture the attitudes and behaviors of active duty military members spouses throughout the world. This report describes the sampling and weighting methodologies used in the *2010 PEV7*. Calculation of response rates is described in the final section.

The population of interest for the *2010 PEV7* survey consisted of the spouses of eligible active duty members (1) who are members of the Army, Navy, Marine Corps, Air Force, and Coast Guard (2) who have at least 6 months of service at the time the questionnaire is first fielded, (3) who are U.S. citizens that are at least 18 years old, and (4) who are below flag rank at the time the invitation to participate is mailed.

The survey administration period lasted from December 20, 2010 to March 31, 2011. A sample of 50,132 active duty members was selected from the corresponding eligible populations of 799,606 active duty members. Based on updated personnel records and self-reported data, a total of 47,301 sample members were determined to be eligible for the survey. Usable questionnaires were returned by 6,491 members.

The 2010 PEV7 used a single-stage, stratified sample design. The allocation was nonproportional, with oversampling of small domains and population subgroups having low response rates. The total sample size was based on precision requirements for key reporting domains. The allocation was determined by an optimization algorithm that minimized the cost of the survey while meeting the precision requirements.

Analytic weights were created in five steps to account for unequal selection probabilities and varying response rates among population subgroups. First, sample records were classified for weighting according to eligibility status (known or unknown eligibility) then the sampling weights (i.e., the inverse of the selection probabilities) were calculated. Second, the sampling weights were adjusted to account for sample members whose eligibility could not be determined. Third, the eligibility-adjusted weights were again adjusted to account for eligible sample members who did not return usable questionnaires. Fourth, the adjusted weights were post-stratified to match population totals and to reduce bias unaccounted for by the previous weighting steps. Finally, sampling strata were collapsed to create strata for variance estimation by means of Taylor series linearization.

Location, completion, and response rates were calculated for the sample and for population subgroups after the field closed and data were received. These rates were computed according to the R3 recommendations of the American Association of Public Opinion Researchers (AAPOR, 2008). The overall location, completion, and response rates of active duty spouses were 92%, 15%, and 14% respectively.

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# **2010 POST-ELECTION VOTING SURVEY OF ACTIVE DUTY MILITARY SPOUSES: STATISTICAL METHODOLOGY REPORT**

## **Introduction**

The Uniformed and Overseas Citizens Absentee Voting Act of 1986 (UOCAVA), 42 USC 1973ff, permits members of the Uniformed Services and Merchant Marine, and their eligible family members and all citizens residing outside the United States who are absent from the United States and its territories to vote in the general election for federal offices. These groups include:

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The objectives of the 2010 post-election surveys are: (1) to gauge participation in the electoral process by citizens covered by UOCAVA, (2) to assess the impact of the FVAP’s efforts to simplify and ease the process of voting absentee, (3) to evaluate other progress made to facilitate voting participation, and (4) to identify any remaining obstacles to voting by these citizens. Surveys were done of military members, federal civilian employees overseas, other U.S. citizens overseas, voting assistance personnel, and local election officials in the U.S.

This report focuses on the *2010 Post-Election Voting Survey of Active Duty Military Spouses (2010 PEV7)*, which was designed to capture the attitudes and behaviors of active duty military members spouses throughout the world. This report describes the sampling and weighting methodologies used in the *2010 PEV7*. Calculation of response rates is described in the final section.

## ***Sample Design and Selection***

### ***Target Population***

The target population for the active duty members of the *2010 PEV7* was designed to represent individuals meeting all of the following criteria:

1. An active duty member of the Army, Navy, Marine Corps, Air Force, and Coast Guard;
2. At least 6 months of service by the beginning of the survey fielding period;
3. Up to and including paygrade O6;
4. U.S. citizens;
5. At least 18 years old and married.

Fielding of the 2010 PEV7 survey began December 20, 2010 and ended on March 31, 2011.

### ***Sampling Frame***

The sampling frame was drawn from the *June 2010 Active Duty Master Edit File (ADMF)* and consist of 799,606 married active duty members. Auxiliary information used to develop the frame was obtained from the June 2010 Family Database, the April 2010 Basic Allowance for Housing Files and the July 2010 Contingency Tracking System (CTS) Deployment file. Additionally, to update a member's active duty status the July 2010 ADMF and the July 2010 Defense Enrollment Eligibility Reporting System (DEERS) Medical Point-in-Time Extracts (PITE) were used. Ineligible sample members were identified using the September 2010 ADMF and September 2010 DEERS PITE. Other individuals were identified as ineligible by self or proxy report due to divorce, separation, retirement, or incarceration, by the survey control system and during the survey fielding period, December 2010, through March 31, 2011.

### ***Sample Design***

The 2010 PEV7 sample used a single-stage stratified design. Five population characteristics defined the stratification dimensions for active duty members: Service, paygrade, race/ethnicity, age, and duty location. These are the first five variables displayed in Table 1 and are marked by an asterisk (\*). The active duty frame was partitioned into 214 strata, produced by cross-classification of the stratification variables. Levels were collapsed within dimensions; occasionally, dimensions were collapsed, in reverse order as listed. Service and paygrade boundaries were preserved.

Within each stratum, individuals were selected with equal probability and without replacement. Since the allocation of the sample was not proportional to the size of the strata, selection probabilities varied among strata (i.e., individuals were not selected with equal probability overall). Nonproportional allocation was used to achieve adequate sample sizes for small subpopulations of analytic interest (i.e., the survey reporting domains). These domains included subpopulations defined by the stratification characteristics, as well as other key reporting domains. Key reporting domain variables are shown in Table 1.

**Table 1.**  
***Variables for Stratification and Key Reporting Domains***

| Variable                     | Categories   |
|------------------------------|--|
| Active Duty Service Branch * | Army<br>Navy<br>Marine corps<br>Air Force<br>Coast Guard   |
| Paygrade Group *             | E1-E4 / Unknown Enlisted<br>E5-E9<br>W1-W5<br>O1-O3 / Unknown Officers<br>O4-O6                  |
| Race/Ethnic Category *       | Non-minority / Unknown<br>Minority   |
| Age *                        | 18-24 years old<br>25-29 years old<br>30-34 years old<br>35-44 years old<br>45 years old or more |
| Duty Location 2*             | US & US Territories, Other, Unknown<br>Overseas  |
| CONUS                        | CONUS<br>OCONUS  |
| Gender                       | Male<br>Female   |

Note. \* denotes stratification variable.

## ***Sample Allocation***

The 2010 PEV7 total sample size consisted of 50,312 active duty members. The sample was determined based on precision requirements for key reporting domains.

Given estimated variable survey costs and anticipated eligibility and response rates, an optimization algorithm determined the minimum-cost allocation that simultaneously satisfied the domain precision requirements. Estimated eligibility and response rates for the 2010 PEV7 sample were based on the 2008 *Active Duty Spouse Survey*. The allocation was accomplished by means of the DMDC Sample Planning Tool (SPT), Version 2.1 (Dever & Mason, 2003). This application is based on the method originally developed by J. R. Chromy (1987) and described in Mason, Wheelless, George, Dever, Riemer, and Elig (1995). The SPT defines domain variance equations in terms of unknown stratum sample sizes and user-specified precision constraints. A cost function is defined in terms of the unknown stratum sample sizes and the per-unit cost of data collection, editing, and processing. The variance equations are solved simultaneously, subject to the constraints imposed, for the sample size that minimizes the cost function. Eligibility rates modify the estimated prevalence rates used in the variance equations, thus affecting the allocation; response rates inflate the allocation, thus affecting the final sample size.

Although 43 active duty member domains were defined for the 2010 PEV7 allocation, precision constraints were imposed only on the domains of primary interest. Generally, the precision requirement was based on an estimated prevalence rate of 0.5 with a 95 percent confidence interval half-width no greater than 0.05. Constraints were manipulated to produce an allocation that achieved satisfactory precision for the domains of interest at an approximate sample size of 50,000.

Sample sizes by service component for the levels of the stratification dimensions for active duty members are shown in Table 2. Unknowns are grouped with the largest category of the variable. For example, if the paygrade for enlisted member is unknown and the largest enlisted category in the paygrade variable is E4, then the unknown is added to E4.

**Table 2.**  
***Sample Size by Stratification Variables***

| <b>Stratification Variable</b>          | <b>Total</b> | <b>Army</b> | <b>Navy</b> | <b>Marine Corps</b> | <b>Air Force</b> | <b>Coast Guard</b> |
|---|--------------|-------------|-------------|---------------------|------------------|--------------------|
| <b>Total</b>                            | 50,132       | 18,910      | 8,478       | 6,709               | 10,425           | 5,610              |
| <b>Paygrade Group</b>                   |              |             |             |                     |                  |                    |
| E1-E4                                   | 14,390       | 6,509       | 1,992       | 2,116               | 2,886            | 887                |
| E5-E9                                   | 20,259       | 6,890       | 3,998       | 2,446               | 5,004            | 1,921              |
| W1-W5                                   | 4,942        | 3,554       | 413         | 529                 | 0                | 446                |
| O1-O3                                   | 4,781        | 889         | 978         | 847                 | 1,015            | 1,052              |
| O4-O6                                   | 5,760        | 1,068       | 1,097       | 771                 | 1,520            | 1,304              |
| <b>Race/Ethnicity</b>                   |              |             |             |                     |                  |                    |
| Non-minority                            | 32,644       | 11,614      | 4,588       | 4,586               | 7,425            | 4,431              |
| Minority                                | 17,488       | 7,296       | 3,890       | 2,123               | 3,000            | 1,179              |
| <b>Age</b>                              |              |             |             |                     |                  |                    |
| 18-24 years old                         | 11,801       | 4,560       | 1,692       | 2,290               | 2,677            | 582                |
| 25-29 years old                         | 10,915       | 4,137       | 1,865       | 1,481               | 2,317            | 1,115              |
| 30-34 years old                         | 9,121        | 3,547       | 1,542       | 1,052               | 1,922            | 1,058              |
| 35-44 years old                         | 12,708       | 4,385       | 2,438       | 1,638               | 2,119            | 2,128              |
| 45 years old and older                  | 5,587        | 2,281       | 941         | 248                 | 1,390            | 727                |
| <b>Region Hierarchical Collapsed</b>    |              |             |             |                     |                  |                    |
| U.S. & U.S. Territories, Other, Unknown | 32,943       | 11,367      | 5,915       | 5,078               | 4,995            | 5,588              |
| Overseas                                | 17,189       | 7,543       | 2,563       | 1,631               | 5,430            | 22                 |

### ***Weighting***

Analytical weights for the 2010 PEV7 were created to account for unequal probabilities of selection and varying response rates among population subgroups. Sampling weights were computed as the inverse of the selection probabilities. After determining case dispositions, the

base weights were adjusted for eligibility which was adjusted for completion to primarily account for nonresponse. The adjusted weights were poststratified to match population totals and to reduce bias unaccounted for by the previous weighting steps.

### ***Case Dispositions***

Case dispositions were assigned for weighting based on eligibility and completion of the survey. Execution of the weighting process and computation of response rates both depend on this classification.

Final case dispositions for weighting were determined using information from personnel records, field operations (the Survey Control System or SCS), and returned surveys. No single source of information is both complete and correct; inconsistencies among sources were resolved according to the order of precedence shown in Table 3.

**Table 3.**  
***Case Dispositions for Weighting***

| <b>Case Disposition (Samp_DC)</b>           | <b>Information Source</b>                                       | <b>Conditions</b>   |
|---|---|---|
| 1. Record ineligible                        | Personnel record  | Sample ineligible—deceased or no address available in DEERS.  |
| 2. Ineligible by self- or proxy-report      | Survey Control System (SCS)                                     | "Retired," "No longer employed by DoD," or "Deceased."  |
| 3. Ineligible by survey self-report         | First survey question   | Active duty member retired or separated from military; or divorced  |
| 4. Eligible, complete response              | Item response rate  | Item response is at least 50%.  |
| 5. Eligible, incomplete response            | Item response rate  | Survey isn't blank but item response is less than 50%.  |
| 6. Unknown eligibility, complete response   | Personnel record, first survey question, item response rate     | Incomplete personnel record and first survey item is missing and item response is at least 50%;   |
| 7. Unknown eligibility, incomplete response | Personnel record, first survey question, and item response rate | Incomplete personnel record AND first survey question is missing AND return is not blank AND item response is less than 50%;  |
| 8. Active refusal                           | SCS   | Reason refused is any   |
|   |   | Reason ineligible is "other"  |
|   |   | Reason survey is blank is "refused-too long", "refused-inappropriate/intrusive", "refused-other", "ineligible-other", "unreachable at this address", "refused by current resident", "concerned about security/confidentiality." |
| 9. Blank return                             | SCS   | No reason given.  |
| 10. PND                                     | SCS   | Postal non-deliverable or original non-locatable.   |
| 11. Non-respondent                          | Remainder   | Remainder   |

This order is critical to resolving case dispositions. For example, suppose a sample person refused the survey with the reason that it was too long; in the absence of any other information the disposition would be “eligible nonrespondent.” If a proxy report also indicated that this person had been hospitalized and was unable to complete the survey, the disposition would be “ineligible.” Final case dispositions for the 2010 PEV7 are shown in Table 4. The total number of eligible complete responses by service and location is given in Table 5.

**Table 4.**  
*Sample Size by Case Disposition Categories*

| <b>Case Disposition<br/>Category and (Code Value)</b> | <b>Sample Size</b> |
|---|--------------------|
| Record ineligible                                     | 2,140              |
| Ineligible by self- or proxy-report                   | 51                 |
| Ineligible by survey self report                      | 640                |
| Eligible—complete response                            | 6,491              |
| Eligible—incomplete response                          | 62                 |
| Active refusal—refused, deployed, other               | 374                |
| Blank return  | 481                |
| PND—postal non-deliverable                            | 4,158              |
| Non-respondents                                       | 35,735             |
| Total   | 50,132             |

**Table 5.**  
*Complete Eligible Respondents by Service and Location*

| <b>Service</b> | <b>U.S./U.S.<br/>Territories</b> | <b>Overseas</b> | <b>Total</b> |
|----------------|----------------------------------|-----------------|--------------|
| Army           | 1,306                            | 698             | 2,004        |
| Navy           | 827                              | 266             | 1,093        |
| Marine Corps   | 622                              | 182             | 804          |
| Air Force      | 778                              | 621             | 1,399        |
| Coast Guard    | 1,183                            | 8               | 1,191        |
| Total          | 4,716                            | 1,775           | 6,491        |

### ***Nonresponse Adjustments and Final Weights***

After case dispositions were resolved, the sampling weights were adjusted for nonresponse. First, the sampling weights for cases of known eligibility (Samp\_DC = 2, 3, 4, or 5) were adjusted to account for cases of unknown eligibility (Samp\_DC = 8, 9, 10, or 11). Next,

the eligibility-adjusted weights for eligible respondents (Samp\_DC = 4) were adjusted to account for eligible sample members who had not returned a completed survey (Samp\_DC = 5). Record ineligibles (Samp\_DC = 1; sample members determined to be ineligible by the DEERS PITE match before survey administration) were excluded from the nonresponse adjustments.

Weighting adjustment factors for eligibility and completion were computed as the inverse of model-predicted probabilities. First, a logistic regression model was used to predict the probability of eligibility for the survey (known eligibility versus unknown eligibility). A second logistic regression model was used to predict the probability of response among eligible sample members (complete response versus incomplete). Chi-squared Automatic Interaction Detector (CHAID) was used to determine the best predictors for each logistic model. Both logistic models were weighted. The first model was weighted by the sampling weight, and the second model was weighted by the eligibility-adjusted weight.

Finally, the weights were poststratified to match population totals and to reduce bias unaccounted for by the previous weighting adjustments. Poststratification cells were defined by the cross-classification of service branch, paygrade, age, region and race. Within each poststratification cell, the nonresponse-adjusted weights for eligible respondents (Samp\_DC = 4) and self-reported ineligibles (Samp\_DC = 2, 3) were adjusted to match population counts. Final weights for Record ineligibles (Samp\_DC = 1) were set to zero. Distributions of the sampling weights, intermediate weights, final weights, and adjustment factors by eligibility status are shown in Table 6. The sum of weights by eligibility status is presented in Table 7.

**Table 6.**  
***Distribution of Weights and Adjustment Factors by Eligibility Status***

| <b>Eligibility Status</b> | <b>Statistic</b> | <b>Sampling Weight</b> | <b>Eligibility Status Adjusted Weight</b> | <b>Complete Eligible Response Adjusted Weight</b> | <b>Final Weight With Nonresponse and Post-stratification Factors</b> | <b>Eligibility Status Factor</b> | <b>Complete Eligible Response Factor</b> | <b>Post-stratification Factor</b> |
|---------------------------|------------------|------------------------|---|---|--|----------------------------------|--|-----------------------------------|
| Eligible Respondents      | N                | 6,491                  | 6,491                                     | 6,491   | 6,491  | 6,491                            | 6,491                                    | 6,491                             |
|                           | MIN              | 1                      | 4.29                                      | 4.29  | 4.32   | 2.88                             | 1  | 0.42                              |
|                           | MAX              | 50.03                  | 518.99                                    | 518.99  | 538  | 18.22                            | 1  | 2.33                              |
|                           | MEAN             | 15.26                  | 105.52                                    | 105.52  | 111.57   | 6.49                             | 1  | 1.06                              |
|                           | STD              | 14.80                  | 116.71                                    | 116.71  | 124.47   | 3.56                             | 0  | 0.16                              |
|                           | CV               | 0.97                   | 1.11                                      | 1.11  | 1.12   | 0.55                             | 0  | 0.15                              |
| Self/Proxy Ineligibles    | N                | 691                    | 691                                       | 691   | 691  | 691                              | 0  | 691                               |
|                           | MIN              | 1                      | 4.29                                      | 4.29  | 4.32   | 2.88                             | .  | 0.42                              |
|                           | MAX              | 50.03                  | 477.15                                    | 477.15  | 538  | 18.22                            | .  | 2.33                              |
|                           | MEAN             | 14.49                  | 101.90                                    | 101.90  | 109.14   | 6.79                             | .  | 1.10                              |
|                           | STD              | 14.00                  | 106.72                                    | 106.72  | 114.37   | 3.23                             | .  | 0.19                              |
|                           | CV               | 0.97                   | 1.05                                      | 1.05  | 1.05   | 0.48                             | .  | 0.17                              |
| Non-Respondents           | N                | 40,810                 | 40,810                                    | 40,810  | 40,810   | 40,810                           | 62                                       | 0                                 |
|                           | MIN              | 1                      | 0   | 0   | 0  | 0                                | 0  | .                                 |
|                           | MAX              | 50.03                  | 396.05                                    | 0   | 0  | 18.22                            | 0  | .                                 |
|                           | MEAN             | 16.02                  | 0.18                                      | 0   | 0  | 0.01                             | 0  | .                                 |
|                           | STD              | 14.00                  | 6.39                                      | 0   | 0  | 0.29                             | 0  | .                                 |
|                           | CV               | 0.87                   | 34.76                                     | .   | .  | 28.50                            | .  | .                                 |
| Record Ineligibles        | N                | 2,140                  | 2,140                                     | 2,140   | 2,140  | 0                                | 0  | 0                                 |
|                           | MIN              | 1                      | 1   | 1   | 0  | .                                | .  | .                                 |
|                           | MAX              | 50.03                  | 50.03                                     | 50.03   | 0  | .                                | .  | .                                 |
|                           | MEAN             | 17.18                  | 17.18                                     | 17.18   | 0  | .                                | .  | .                                 |
|                           | STD              | 14.63                  | 14.63                                     | 14.63   | 0  | .                                | .  | .                                 |
|                           | CV               | 0.85                   | 0.85                                      | 0.85  | .  | .                                | .  | .                                 |



**Table 7.**  
***Sum of Weights by Eligibility Status***

| Eligibility Category          | Sum of Sampling weights | Sum of Eligibility Status Adjusted Weights | Sum of Complete Eligible Response Adjusted Weights | Sum of Final Weights With Nonresponse and Poststratification Adjustments |
|-------------------------------|-------------------------|--|--|--|
| Eligible Respondents          | 99,048                  | 684,928                                    | 684,928  | 724,194  |
| Self-Report/Proxy Ineligibles | 10,014                  | 70,416                                     | 70,416   | 75,412   |
| Nonrespondents                | 653,785                 | 7,503                                      | 0  | 0  |
| Record Ineligible             | 36,759                  | 36,759                                     | 36,759   | 0  |
| Total                         | 799,606                 | 799,606                                    | 792,103  | 799,606  |

### ***Variance Estimation***

Analysis of the 2010 PEV7 data requires a variance estimation procedure that accounts for the complex sample design. The final step of the weighting process was to define strata for variance estimation by Taylor series linearization. The 2010 PEV7 variance estimation strata correspond closely to the design strata; however, it was necessary to collapse some sampling strata containing fewer than 25 cases with nonzero final weights into similar strata. A total of 102 variance estimation strata were defined for the 2010 PEV7.

### ***Location, Completion, and Response Rates***

Location, completion, and response rates were calculated in accordance with guidelines established by the Council of American Survey Research Organizations (CASRO). The procedure is based on recommendations for Sample Type II response rates (CASRO, 1982). This definition corresponds to The American Association for Public Opinion Research (AAPOR) RR3 (AAPOR, 2008), which estimates the proportion of eligibles among cases of unknown eligibility.

Location, completion, and response rates were computed for the 2010 PEV7 as follows:

The *location rate* (LR) is defined as

$$LR = \frac{\text{adjusted located sample}}{\text{adjusted eligible sample}} = \frac{N_L}{N_E}.$$

The *completion rate* (CR) is defined as

$$CR = \frac{\text{usable responses}}{\text{adjusted located sample}} = \frac{N_R}{N_L}.$$

The *response rate* (RR) is defined as

$$RR = \frac{\text{usable responses}}{\text{adjusted eligible sample}} = \frac{N_R}{N_E}.$$

where

- $N_L$  = Adjusted located sample
- $N_E$  = Adjusted eligible sample
- $N_R$  = Usable responses.

To identify the cases that contribute to the components of LR, CR, and RR, the disposition codes were grouped as shown in Table 8. Record ineligibles were excluded from calculation of the eligibility rate.

**Table 8.**  
***Disposition Codes for CASRO Response Rates***

| Response Category        | SAMP_DC Values     |
|--------------------------|--------------------|
| Eligible Sample          | 4, 5, 8, 9, 10, 11 |
| Located Sample           | 4, 5, 8, 9, 11     |
| Eligible Response        | 4                  |
| No Return                | 11                 |
| Eligibility Determined   | 2, 3, 4, 5, 8, 9   |
| Self-Reported Ineligible | 2, 3               |

### ***Ineligibility Rate***

The ineligibility rate (IR) is defined as:

$$IR = \frac{\text{self - reported ineligible cases}}{\text{eligible determined cases}}.$$

### ***Estimated Ineligible Postal Non-Deliverable/Not Located Rate***

The estimated ineligible postal non-deliverable or not located (IPNDR) is defined as:

$$IPNDR = \left( \text{Eligible Sample} - \text{Located Sample} \right) \times IR.$$

### ***Estimated Ineligible Nonresponse***

The estimated ineligible nonresponse (EINR) is defined as:

$$EINR = \text{Not returned} \times IR.$$

### ***Adjusted Location Rate***

The adjusted location rate (ALR) is defined as:

$$ALR = \frac{( \text{Located Sample} - EINR )}{( \text{Eligible Sample} - IPNDR - EINR )}.$$

### ***Adjusted Completion Rate***

The adjusted completion rate (ACR) is defined as:

$$ACR = \frac{( \text{Eligible response} )}{( \text{Located Sample} - EINR )}.$$

### ***Adjusted Response Rate***

The adjusted response rate (ARR) is defined as:

$$ARR = \frac{( \text{Eligible response} )}{( \text{Eligible Sample} - IPNDR - EINR )}.$$

Unweighted and weighted sample counts used to compute the overall response rates are shown in Table 9; weighted rates were computed using the sampling weights. The final response rate is the product of the location rate and the completion rate. Both weighted and unweighted location, completion, and response rates for the 2010 PEV7 survey are shown in Table 10. The final sample counts, usable response counts, sums of weights, eligibility adjusted rates, weighted location, weighted completion, and weighted response rates are shown in Table 11.

**Table 9.**  
***Comparison of the Final Sample Relative to the Drawn Sample***

| Case Disposition Categories                    | Sample Counts |             | Weighted Estimates |             |
|--|---------------|-------------|--------------------|-------------|
|  | n             | %           | n                  | %           |
| <b>Drawn sample &amp; Population</b>           | <b>50,132</b> |             | <b>799,606</b>     |             |
| Ineligible on master files                     | -2,140        | 4.3         | -36,759            | 4.6         |
| Self-reported ineligible                       | -691          | 1.4         | -10,014            | 1.3         |
| Total: Ineligible                              | -2,831        | 5.7         | -46,773            | 5.9         |
| <b>Eligible sample</b>                         | <b>47,301</b> | <b>94.4</b> | <b>752,833</b>     | <b>94.2</b> |
| Not located (estimated ineligible)             | -355          | 0.7         | -4717              | 0.6         |
| Not located (estimated eligible)               | -3,803        | 7.6         | -53,473            | 6.7         |
| Total not located                              | -4,158        | 8.3         | -58,190            | 7.3         |
| <b>Located sample</b>                          | <b>43,143</b> | <b>86.1</b> | <b>694,644</b>     | <b>86.9</b> |
| Requested removal from survey mailings         | -374          | 0.8         | -6,217             | 0.8         |
| Returned blank                                 | -481          | 1.0         | -7,208             | 0.9         |
| Skipped key questions                          | -62           | 0.1         | -1,043             | 0.1         |
| Did not return a survey (estimated ineligible) | -3,049        | 6.1         | -47,107            | 5.9         |
| Did not return a survey (estimated eligible)   | -32,686       | 65.2        | -534,020           | 66.8        |
| Total: Nonresponse                             | -36,652       | 73.1        | -595,595           | 74.5        |
| <b>Usable responses</b>                        | <b>6,491</b>  | <b>13.0</b> | <b>99,048</b>      | <b>12.4</b> |

**Table 10.**  
***Eligible Sample Location Rates, Response Rates, and Completion Rates***

| Type of Rate | Computation  | Observed Rates | Weighted Rates |
|--------------|--|----------------|----------------|
| Location     | Adjusted located sample / Adjusted eligible sample | 91%            | 92%            |
| Completion   | Usable responses / Adjusted located sample         | 16%            | 15%            |
| Response     | Usable responses / Adjusted eligible sample        | 15%            | 14%            |

**Table 11.**  
***Rates for Full Sample and Stratification Level***

| Domain             | Label                 | Sample | Usable Responses | Sum of Weights | Eligible Adjusted Responses | Location Rate | Completion Rate | Response Rate |
|--------------------|-----------------------|--------|------------------|----------------|-----------------------------|---------------|-----------------|---------------|
| Sample             | Sample                | 50,132 | 6,491            | 799,606        | 14.30 $\pm$ 0.41            | 92.37%        | 15.30%          | 14.13%        |
| Service            | Army                  | 18,910 | 2,004            | 317,876        | 12.63 $\pm$ 0.66            | 90.33%        | 13.79%          | 12.46%        |
|                    | Navy                  | 8,478  | 1,093            | 169,145        | 15.09 $\pm$ 0.91            | 92.73%        | 16.06%          | 14.89%        |
|                    | Marine Corps          | 6,709  | 804              | 94,252         | 12.23 $\pm$ 0.92            | 91.00%        | 13.30%          | 12.10%        |
|                    | Air Force             | 10,425 | 1,399            | 193,311        | 16.58 $\pm$ 0.93            | 95.48%        | 17.20%          | 16.42%        |
|                    | Coast Guard           | 5,610  | 1,191            | 25,021         | 20.11 $\pm$ 1.07            | 96.89%        | 20.59%          | 19.95%        |
| Pay Group          | E1-E4                 | 14,390 | 940              | 216,674        | 7.88 $\pm$ 0.55             | 85.76%        | 9.08%           | 7.79%         |
|                    | E5-E9                 | 20,259 | 2,280            | 415,593        | 13.81 $\pm$ 0.61            | 94.01%        | 14.46%          | 13.60%        |
|                    | W1-W5                 | 4,942  | 856              | 17,567         | 19.46 $\pm$ 0.96            | 96.10%        | 20.07%          | 19.29%        |
|                    | O1-O3                 | 4,781  | 974              | 73,151         | 21.26 $\pm$ 1.53            | 95.89%        | 22.02%          | 21.12%        |
|                    | O4-O6                 | 5,760  | 1,441            | 76,621         | 26.89 $\pm$ 1.69            | 97.75%        | 27.34%          | 26.72%        |
| Gender             | Male                  | 44,347 | 5,834            | 704,814        | 14.41 $\pm$ 0.44            | 92.69%        | 15.36%          | 14.24%        |
|                    | Female                | 5,785  | 657              | 94,792         | 13.44 $\pm$ 1.22            | 89.91%        | 14.78%          | 13.29%        |
| Race/<br>Ethnicity | Nonminority           | 32,644 | 4,715            | 541,480        | 15.15 $\pm$ 0.52            | 93.07%        | 16.12%          | 15.01%        |
|                    | Minority              | 17,488 | 1,776            | 258,126        | 12.49 $\pm$ 0.65            | 90.90%        | 13.51%          | 12.28%        |
| Region             | US & US territories   | 32,943 | 4,716            | 714,725        | 14.58 $\pm$ 0.47            | 92.92%        | 15.52%          | 14.42%        |
|                    | Overseas              | 17,189 | 1,775            | 84,881         | 11.94 $\pm$ 0.57            | 87.83%        | 13.29%          | 11.68%        |
| Age Group          | 18-24 Years Old       | 11,801 | 767              | 164,575        | 7.47 $\pm$ 0.59             | 85.73%        | 8.64%           | 7.40%         |
|                    | 25-29 Years Old       | 10,915 | 1,067            | 207,650        | 11.59 $\pm$ 0.73            | 91.29%        | 12.54%          | 11.45%        |
|                    | 30-34 Years Old       | 9,121  | 1,141            | 160,893        | 13.92 $\pm$ 0.93            | 94.06%        | 14.64%          | 13.77%        |
|                    | 35-44 Years Old       | 12,708 | 2,199            | 221,706        | 19.37 $\pm$ 0.95            | 96.18%        | 19.88%          | 19.13%        |
|                    | 45 Years Old or Older | 5,587  | 1,317            | 44,782         | 28.53 $\pm$ 2.20            | 96.92%        | 29.17%          | 28.27%        |



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## **Appendix A.**

### **Sample Allocation**



**Table A1.**  
**Sample Allocation**

| Stratum Size | Allocation Size | Sample Size | Pct Sampled | Label                              |
|--------------|-----------------|-------------|-------------|------------------------------------|
| 29,353       | 195             | 1,121       | 3.80        | 001 Army_E1-E4_NonM_18-24YO_US+TER |
| 3,539        | 243             | 1,221       | 34.50       | 002 Army_E1-E4_NonM_18-24YO_OVRS_  |
| 19,057       | 125             | 641         | 3.40        | 003 Army_E1-E4_NonM_25-29YO_US+TER |
| 2,324        | 70              | 357         | 15.40       | 004 Army_E1-E4_NonM_25-29YO_OVRS_  |
| 6,333        | 42              | 192         | 3.00        | 005 Army_E1-E4_NonM_30-34YO_US+TER |
| 781          | 30              | 137         | 17.50       | 006 Army_E1-E4_NonM_30-34YO_OVRS_  |
| 3,927        | 27              | 108         | 2.80        | 007 Army_E1-E4_NonM_35+YO_US+TER   |
| 430          | 27              | 108         | 25.10       | 008 Army_E1-E4_NonM_35+YO_OVRS_    |
| 13,929       | 88              | 715         | 5.10        | 009 Army_E1-E4_Min__18-24YO_US+TER |
| 1,882        | 96              | 733         | 38.90       | 010 Army_E1-E4_Min__18-24YO_OVRS_  |
| 9,724        | 62              | 425         | 4.40        | 011 Army_E1-E4_Min__25-29YO_US+TER |
| 1,336        | 40              | 272         | 20.40       | 012 Army_E1-E4_Min__25-29YO_OVRS_  |
| 3,756        | 24              | 160         | 4.30        | 013 Army_E1-E4_Min__30-34YO_US+TER |
| 522          | 20              | 118         | 22.60       | 014 Army_E1-E4_Min__30-34YO_OVRS_  |
| 2,293        | 16              | 85          | 3.70        | 015 Army_E1-E4_Min__35+YO_US+TER   |
| 369          | 22              | 116         | 31.40       | 016 Army_E1-E4_Min__35+YO_OVRS_    |
| 6,951        | 46              | 251         | 3.60        | 017 Army_E5-E9_NonM_18-24YO_US+TER |
| 734          | 39              | 213         | 29.00       | 018 Army_E5-E9_NonM_18-24YO_OVRS_  |
| 24,872       | 165             | 671         | 2.70        | 019 Army_E5-E9_NonM_25-29YO_US+TER |
| 2,752        | 85              | 344         | 12.50       | 020 Army_E5-E9_NonM_25-29YO_OVRS_  |
| 20,390       | 136             | 496         | 2.40        | 021 Army_E5-E9_NonM_30-34YO_US+TER |
| 2,286        | 89              | 322         | 14.10       | 022 Army_E5-E9_NonM_30-34YO_OVRS_  |
| 26,739       | 182             | 591         | 2.20        | 023 Army_E5-E9_NonM_35-44YO_US+TER |
| 2,978        | 66              | 213         | 7.20        | 024 Army_E5-E9_NonM_35-44YO_OVRS_  |
| 3,696        | 25              | 132         | 3.60        | 025 Army_E5-E9_NonM_44+YO__US+TER  |
| 447          | 87              | 447         | 100.00      | 026 Army_E5-E9_NonM_44+YO__OVRS_   |
| 3,228        | 22              | 120         | 3.70        | 027 Army_E5-E9_Min__18-24YO_US+TER |
| 386          | 21              | 115         | 29.80       | 028 Army_E5-E9_Min__18-24YO_OVRS_  |
| 13,337       | 87              | 463         | 3.50        | 029 Army_E5-E9_Min__25-29YO_US+TER |
| 1,963        | 59              | 311         | 15.80       | 030 Army_E5-E9_Min__25-29YO_OVRS_  |
| 13,397       | 88              | 406         | 3.00        | 031 Army_E5-E9_Min__30-34YO_US+TER |
| 1,871        | 72              | 326         | 17.40       | 032 Army_E5-E9_Min__30-34YO_OVRS_  |
| 20,624       | 139             | 567         | 2.70        | 033 Army_E5-E9_Min__35-44YO_US+TER |
| 2,916        | 64              | 258         | 8.80        | 034 Army_E5-E9_Min__35-44YO_OVRS_  |
| 3,322        | 22              | 116         | 3.50        | 035 Army_E5-E9_Min__44+YO__US+TER  |
| 528          | 103             | 528         | 100.00      | 036 Army_E5-E9_Min__44+YO__OVRS_   |
| 1,101        | 10              | 25          | 2.30        | 037 Army_O1-O3_NonM_18-24YO_US+TER |
| 664          | 29              | 72          | 10.80       | 038 Army_O1-O3_NonM_18-29YO_OVRS_  |
| 6,493        | 54              | 136         | 2.10        | 039 Army_O1-O3_NonM_25-29YO_US+TER |
| 5,665        | 47              | 122         | 2.20        | 040 Army_O1-O3_NonM_30-34YO_US+TER |

**Table A1. (continued)**

| Stratum Size | Allocation Size | Sample Size | Pct Sampled | Label                              |
|--------------|-----------------|-------------|-------------|------------------------------------|
| 521          | 21              | 54          | 10.40       | 041 Army_O1-O3_NonM_30-34YO_OVRS_  |
| 4,064        | 34              | 88          | 2.20        | 042 Army_O1-O3_NonM_35-44YO_US+TER |
| 486          | 40              | 101         | 20.80       | 043 Army_O1-O3_NonM_35+YO_OVRS_    |
| 315          | 3               | 7           | 2.20        | 044 Army_O1-O3_NonM_44+YO_US+TER   |
| 1,632        | 14              | 44          | 2.70        | 045 Army_O1-O3_Min__18-29YO_US+TER |
| 183          | 8               | 25          | 13.70       | 046 Army_O1-O3_Min__18-29YO_OVRS_  |
| 1,896        | 16              | 51          | 2.70        | 047 Army_O1-O3_Min__30-34YO_US+TER |
| 264          | 11              | 35          | 13.30       | 048 Army_O1-O3_Min__30-34YO_OVRS_  |
| 2,161        | 18              | 58          | 2.70        | 049 Army_O1-O3_Min__35+YO_US+TER   |
| 262          | 23              | 71          | 27.10       | 050 Army_O1-O3_Min__35+YO_OVRS_    |
| 2,167        | 18              | 44          | 2.00        | 051 Army_O4-O6_NonM_25-34YO_US+TER |
| 166          | 7               | 17          | 10.20       | 052 Army_O4-O6_NonM_25-34YO_OVRS_  |
| 11,407       | 95              | 228         | 2.00        | 053 Army_O4-O6_NonM_35-44YO_US+TER |
| 1,371        | 32              | 76          | 5.50        | 054 Army_O4-O6_NonM_35-44YO_OVRS_  |
| 5,588        | 47              | 112         | 2.00        | 055 Army_O4-O6_NonM_44+YO_US+TER   |
| 738          | 149             | 355         | 48.10       | 056 Army_O4-O6_NonM_44+YO_OVRS_    |
| 447          | 4               | 12          | 2.70        | 057 Army_O4-O6_Min__30-34YO_US+TER |
| 427          | 13              | 38          | 8.90        | 058 Army_O4-O6_Min__29-44YO_OVRS_  |
| 2,795        | 24              | 70          | 2.50        | 059 Army_O4-O6_Min__35-44YO_US+TER |
| 1,268        | 11              | 26          | 2.10        | 060 Army_O4-O6_Min__44+YO_US+TER   |
| 190          | 38              | 90          | 47.40       | 061 Army_O4-O6_Min__44+YO_OVRS_    |
| 10,733       | 71              | 388         | 3.60        | 062 Navy_E1-E4_NonM_18-24YO_US+TER |
| 488          | 27              | 134         | 27.50       | 063 Navy_E1-E4_NonM_18-29YO_OVRS_  |
| 4,304        | 29              | 146         | 3.40        | 064 Navy_E1-E4_NonM_25-29YO_US+TER |
| 1,095        | 16              | 70          | 6.40        | 065 Navy_E1-E4_NonM_30+YO_AllRg    |
| 12,658       | 81              | 633         | 5.00        | 066 Navy_E1-E4_Min__18-24YO_US+TER |
| 486          | 25              | 195         | 40.10       | 067 Navy_E1-E4_Min__18-24YO_OVRS_  |
| 5,461        | 35              | 246         | 4.50        | 068 Navy_E1-E4_Min__25-29YO_US+TER |
| 254          | 8               | 56          | 22.00       | 069 Navy_E1-E4_Min__25-29YO_OVRS_  |
| 1,745        | 21              | 124         | 7.10        | 070 Navy_E1-E4_Min__29-44YO_AllRg  |
| 3,658        | 24              | 131         | 3.60        | 071 Navy_E5-E9_NonM_18-24YO_US+TER |
| 194          | 11              | 60          | 30.90       | 072 Navy_E5-E9_NonM_18-24YO_OVRS_  |
| 14,060       | 94              | 373         | 2.70        | 073 Navy_E5-E9_NonM_25-29YO_US+TER |
| 926          | 28              | 166         | 17.90       | 074 Navy_E5-E9_NonM_25-29YO_OVRS_  |
| 13,439       | 90              | 319         | 2.40        | 075 Navy_E5-E9_NonM_30-34YO_US+TER |
| 881          | 35              | 123         | 14.00       | 076 Navy_E5-E9_NonM_30-34YO_OVRS_  |
| 18,124       | 124             | 391         | 2.20        | 077 Navy_E5-E9_NonM_35-44YO_US+TER |
| 1,497        | 144             | 447         | 29.90       | 078 Navy_E5-E9_NonM_35+YO_OVRS_    |
| 2,155        | 15              | 44          | 2.00        | 079 Navy_E5-E9_NonM_44+YO_US+TER   |
| 2,859        | 19              | 104         | 3.60        | 080 Navy_E5-E9_Min__18-24YO_US+TER |
| 1,090        | 45              | 246         | 22.60       | 081 Navy_E5-E9_Min__18-29YO_OVRS_  |
| 10,148       | 66              | 367         | 3.60        | 082 Navy_E5-E9_Min__25-29YO_US+TER |
| 10,025       | 66              | 317         | 3.20        | 083 Navy_E5-E9_Min__30-34YO_US+TER |

**Table A1. (continued)**

| Stratum Size | Allocation Size | Sample Size | Pct Sampled | Label                              |
|--------------|-----------------|-------------|-------------|------------------------------------|
| 1,137        | 44              | 210         | 18.50       | 084 Navy_E5-E9_Min__30-34YO_OVRS_  |
| 12,893       | 87              | 364         | 2.80        | 085 Navy_E5-E9_Min__35-44YO_US+TER |
| 1,484        | 33              | 134         | 9.00        | 086 Navy_E5-E9_Min__35-44YO_OVRS_  |
| 1,568        | 11              | 34          | 2.20        | 087 Navy_E5-E9_Min__44+YO__US+TER  |
| 270          | 54              | 168         | 62.20       | 088 Navy_E5-E9_Min__44+YO__OVRS_   |
| 549          | 10              | 26          | 4.70        | 089 Navy_O1-O3_NonM_18-24YO_US+TER |
| 233          | 10              | 26          | 11.20       | 090 Navy_O1-O3_NonM_18-29YO_OVRS_  |
| 3,878        | 69              | 178         | 4.60        | 091 Navy_O1-O3_NonM_25-29YO_US+TER |
| 4,003        | 71              | 183         | 4.60        | 092 Navy_O1-O3_NonM_30-34YO_US+TER |
| 265          | 12              | 30          | 11.30       | 093 Navy_O1-O3_NonM_30-34YO_OVRS_  |
| 3,329        | 61              | 154         | 4.60        | 094 Navy_O1-O3_NonM_35-44YO_US+TER |
| 327          | 31              | 78          | 23.90       | 095 Navy_O1-O3_NonM_35+YO_OVRS_    |
| 269          | 5               | 15          | 5.60        | 096 Navy_O1-O3_NonM_44+YO__US+TER  |
| 2,098        | 47              | 158         | 7.50        | 097 Navy_O1-O3_Min__18-34YO_AllRg  |
| 1,435        | 26              | 86          | 6.00        | 098 Navy_O1-O3_Min__35+YO_US+TER   |
| 196          | 13              | 44          | 22.40       | 099 Navy_O1-O3_Min__35+YO_OVRS_    |
| 1,369        | 25              | 60          | 4.40        | 100 Navy_O4-O6_NonM_30-34YO_US+TER |
| 875          | 30              | 71          | 8.10        | 101 Navy_O4-O6_NonM_29-44YO_OVRS_  |
| 7,594        | 137             | 321         | 4.20        | 102 Navy_O4-O6_NonM_35-44YO_US+TER |
| 4,384        | 79              | 188         | 4.30        | 103 Navy_O4-O6_NonM_44+YO__US+TER  |
| 401          | 82              | 195         | 48.60       | 104 Navy_O4-O6_NonM_44+YO__OVRS_   |
| 2,537        | 45              | 138         | 5.40        | 105 Navy_O4-O6_Min__30+YO__US+TER  |
| 303          | 42              | 124         | 40.90       | 106 Navy_O4-O6_Min__30+YO__OVRS_   |
| 20,452       | 174             | 941         | 4.60        | 107 MC__E1-E4_NonM_18-24YO_US+TER  |
| 922          | 49              | 266         | 28.90       | 108 MC__E1-E4_NonM_18-24YO_OVRS_   |
| 4,381        | 37              | 193         | 4.40        | 109 MC__E1-E4_NonM_25-29YO_US+TER  |
| 348          | 12              | 67          | 19.30       | 110 MC__E1-E4_All__25-34YO_OVRS_   |
| 584          | 5               | 25          | 4.30        | 111 MC__E1-E4_All__29-44YO_US+TER  |
| 6,900        | 58              | 417         | 6.00        | 112 MC__E1-E4_Min__18-24YO_US+TER  |
| 419          | 22              | 119         | 28.40       | 113 MC__E1-E4_Min__18-24YO_OVRS_   |
| 1,566        | 13              | 88          | 5.60        | 114 MC__E1-E4_Min__25-29YO_US+TER  |
| 4,367        | 37              | 266         | 6.10        | 115 MC__E5-E9_NonM_18-24YO_US+TER  |
| 247          | 13              | 94          | 38.10       | 116 MC__E5-E9_NonM_18-24YO_OVRS_   |
| 10,396       | 88              | 365         | 3.50        | 117 MC__E5-E9_NonM_25-29YO_US+TER  |
| 715          | 23              | 95          | 13.30       | 118 MC__E5-E9_NonM_25-29YO_OVRS_   |
| 6,019        | 51              | 190         | 3.20        | 119 MC__E5-E9_NonM_30-34YO_US+TER  |
| 521          | 21              | 77          | 14.80       | 120 MC__E5-E9_NonM_30-34YO_OVRS_   |
| 5,287        | 46              | 151         | 2.90        | 121 MC__E5-E9_NonM_35-44YO_US+TER  |
| 650          | 57              | 184         | 28.30       | 122 MC__E5-E9_NonM_35+YO_OVRS_     |
| 502          | 5               | 16          | 3.20        | 123 MC__E5-E9_NonM_44+YO__US+TER   |
| 1,634        | 14              | 101         | 6.20        | 124 MC__E5-E9_Min__18-24YO_US+TER  |
| 576          | 26              | 138         | 24.00       | 125 MC__E5-E9_Min__18-29YO_OVRS_   |
| 4,995        | 42              | 223         | 4.50        | 126 MC__E5-E9_Min__25-29YO_US+TER  |

**Table A1. (continued)**

| Stratum Size | Allocation Size | Sample Size | Pct Sampled | Label                             |
|--------------|-----------------|-------------|-------------|-----------------------------------|
| 3,589        | 30              | 142         | 4.00        | 127 MC__E5-E9_Min__30-34YO_US+TER |
| 488          | 19              | 88          | 18.00       | 128 MC__E5-E9_Min__30-34YO_OVRS_  |
| 3,405        | 30              | 122         | 3.60        | 129 MC__E5-E9_Min__35-44YO_US+TER |
| 582          | 45              | 181         | 31.10       | 130 MC__E5-E9_Min__35+YO_OVRS_    |
| 348          | 4               | 13          | 3.70        | 131 MC__E5-E9_Min__44+YO_US+TER   |
| 392          | 18              | 55          | 14.00       | 132 MC__O1-O3_NonM_18-24YO_US+TER |
| 2,154        | 96              | 237         | 11.00       | 133 MC__O1-O3_NonM_25-29YO_US+TER |
| 1,913        | 85              | 221         | 11.60       | 134 MC__O1-O3_NonM_30-34YO_US+TER |
| 814          | 37              | 105         | 12.90       | 135 MC__O1-O3_NonM_35+YO_US+TER   |
| 384          | 17              | 52          | 13.50       | 136 MC__O1-O3_Min__18-29YO_US+TER |
| 506          | 32              | 86          | 17.00       | 137 MC__O1-O3_All__18-44YO_OVRS_  |
| 659          | 29              | 91          | 13.80       | 138 MC__O1-O3_Min__30+YO_US+TER   |
| 324          | 15              | 37          | 11.40       | 139 MC__O4-O6_NonM_30-34YO_US+TER |
| 481          | 64              | 154         | 32.00       | 140 MC__O4-O6_NonM_30+YO_OVRS_    |
| 3,193        | 144             | 349         | 10.90       | 141 MC__O4-O6_NonM_35-44YO_US+TER |
| 787          | 35              | 83          | 10.50       | 142 MC__O4-O6_NonM_44+YO_US+TER   |
| 872          | 50              | 148         | 17.00       | 143 MC__O4-O6_Min__30+YO_AllRg    |
| 18,100       | 118             | 663         | 3.70        | 144 AF__E1-E4_NonM_18-24YO_US+TER |
| 2,974        | 155             | 886         | 29.80       | 145 AF__E1-E4_NonM_18-24YO_OVRS_  |
| 7,655        | 51              | 250         | 3.30        | 146 AF__E1-E4_NonM_25-44YO_US+TER |
| 1,402        | 47              | 226         | 16.10       | 147 AF__E1-E4_NonM_25-44YO_OVRS_  |
| 5,461        | 35              | 257         | 4.70        | 148 AF__E1-E4_Min__18-24YO_US+TER |
| 977          | 50              | 368         | 37.70       | 149 AF__E1-E4_Min__18-24YO_OVRS_  |
| 2,276        | 15              | 93          | 4.10        | 150 AF__E1-E4_Min__25-29YO_US+TER |
| 563          | 17              | 102         | 18.10       | 151 AF__E1-E4_Min__25-29YO_OVRS_  |
| 273          | 6               | 41          | 15.00       | 152 AF__E1-E4_Min__29-44YO_AllRg  |
| 2,648        | 17              | 125         | 4.70        | 153 AF__E5-E9_NonM_18-24YO_US+TER |
| 560          | 29              | 213         | 38.00       | 154 AF__E5-E9_NonM_18-24YO_OVRS_  |
| 17,452       | 117             | 445         | 2.50        | 155 AF__E5-E9_NonM_25-29YO_US+TER |
| 3,811        | 118             | 434         | 11.40       | 156 AF__E5-E9_NonM_25-29YO_OVRS_  |
| 16,909       | 114             | 383         | 2.30        | 157 AF__E5-E9_NonM_30-34YO_US+TER |
| 3,919        | 154             | 512         | 13.10       | 158 AF__E5-E9_NonM_30-34YO_OVRS_  |
| 23,909       | 164             | 498         | 2.10        | 159 AF__E5-E9_NonM_35-44YO_US+TER |
| 4,656        | 103             | 308         | 6.60        | 160 AF__E5-E9_NonM_35-44YO_OVRS_  |
| 3,056        | 21              | 69          | 2.30        | 161 AF__E5-E9_NonM_44+YO_US+TER   |
| 525          | 105             | 345         | 65.70       | 162 AF__E5-E9_NonM_44+YO_OVRS_    |
| 706          | 5               | 36          | 5.10        | 163 AF__E5-E9_Min__18-24YO_US+TER |
| 221          | 12              | 86          | 38.90       | 164 AF__E5-E9_Min__18-24YO_OVRS_  |
| 6,716        | 44              | 211         | 3.10        | 165 AF__E5-E9_Min__25-29YO_US+TER |
| 1,904        | 58              | 266         | 14.00       | 166 AF__E5-E9_Min__25-29YO_OVRS_  |
| 6,844        | 46              | 187         | 2.70        | 167 AF__E5-E9_Min__30-34YO_US+TER |
| 2,054        | 80              | 320         | 15.60       | 168 AF__E5-E9_Min__30-34YO_OVRS_  |
| 7,842        | 53              | 192         | 2.40        | 169 AF__E5-E9_Min__35-44YO_US+TER |

**Table A1. (continued)**

| Stratum Size | Allocation Size | Sample Size | Pct Sampled | Label                             |
|--------------|-----------------|-------------|-------------|-----------------------------------|
| 2,129        | 47              | 167         | 7.80        | 170 AF__E5-E9_Min__35-44YO_OVRS_  |
| 1,170        | 8               | 26          | 2.20        | 171 AF__E5-E9_Min__44+YO__US+TER  |
| 276          | 55              | 181         | 65.60       | 172 AF__E5-E9_Min__44+YO__OVRS_   |
| 1,031        | 15              | 36          | 3.50        | 173 AF__O1-O3_NonM_18-24YO_US+TER |
| 710          | 29              | 69          | 9.70        | 174 AF__O1-O3_NonM_18-29YO_OVRS_  |
| 6,484        | 89              | 216         | 3.30        | 175 AF__O1-O3_NonM_25-29YO_US+TER |
| 5,536        | 76              | 186         | 3.40        | 176 AF__O1-O3_NonM_30-34YO_US+TER |
| 674          | 28              | 68          | 10.10       | 177 AF__O1-O3_NonM_30-34YO_OVRS_  |
| 3,783        | 53              | 130         | 3.40        | 178 AF__O1-O3_NonM_35+YO_US+TER   |
| 499          | 40              | 97          | 19.40       | 179 AF__O1-O3_NonM_35+YO_OVRS_    |
| 863          | 12              | 34          | 3.90        | 180 AF__O1-O3_Min__18-29YO_US+TER |
| 220          | 11              | 31          | 14.10       | 181 AF__O1-O3_Min__18-34YO_OVRS_  |
| 845          | 12              | 35          | 4.10        | 182 AF__O1-O3_Min__30-34YO_US+TER |
| 1,058        | 39              | 113         | 10.70       | 183 AF__O1-O3_Min__35+YO_AllRg    |
| 2,523        | 35              | 81          | 3.20        | 184 AF__O4-O6_NonM_30-34YO_US+TER |
| 330          | 14              | 32          | 9.70        | 185 AF__O4-O6_NonM_30-34YO_OVRS_  |
| 11,730       | 162             | 369         | 3.10        | 186 AF__O4-O6_NonM_35-44YO_US+TER |
| 1,586        | 41              | 93          | 5.90        | 187 AF__O4-O6_NonM_35-44YO_OVRS_  |
| 4,763        | 64              | 229         | 4.80        | 188 AF__O4-O6_NonM_44+YO__US+TER  |
| 655          | 129             | 462         | 70.50       | 189 AF__O4-O6_NonM_44+YO__OVRS_   |
| 351          | 5               | 13          | 3.70        | 190 AF__O4-O6_Min__30-34YO_US+TER |
| 374          | 47              | 135         | 36.10       | 191 AF__O4-O6_Min__30+YO__OVRS_   |
| 1,692        | 23              | 74          | 4.40        | 192 AF__O4-O6_Min__35-44YO_US+TER |
| 616          | 9               | 32          | 5.20        | 193 AF__O4-O6_Min__44+YO__US+TER  |
| 1,514        | 54              | 283         | 18.70       | 194 CG__E1-E4_NonM_18-24YO_US+TER |
| 1,225        | 44              | 203         | 16.60       | 195 CG__E1-E4_NonM_25-29YO_US+TER |
| 269          | 10              | 41          | 15.20       | 196 CG__E1-E4_NonM_30+YO__US+TER  |
| 762          | 28              | 179         | 23.50       | 197 CG__E1-E4_Min__18-24YO_US+TER |
| 673          | 24              | 140         | 20.80       | 198 CG__E1-E4_Min__25-29YO_US+TER |
| 199          | 8               | 41          | 20.60       | 199 CG__E1-E4_Min__29-44YO_US+TER |
| 423          | 16              | 59          | 13.90       | 200 CG__E5-E9_NonM_18-24YO_US+TER |
| 3,037        | 110             | 409         | 13.50       | 201 CG__E5-E9_NonM_25-29YO_US+TER |
| 3,236        | 119             | 365         | 11.30       | 202 CG__E5-E9_NonM_30-34YO_AllRg  |
| 3,433        | 123             | 575         | 16.70       | 203 CG__E5-E9_NonM_35-44YO_US+TER |
| 793          | 30              | 99          | 12.50       | 204 CG__E5-E9_NonM_44+YO__US+TER  |
| 1,036        | 38              | 160         | 15.40       | 205 CG__E5-E9_Min__18-29YO_US+TER |
| 966          | 36              | 133         | 13.80       | 206 CG__E5-E9_Min__30-34YO_AllRg  |
| 1,022        | 38              | 95          | 9.30        | 207 CG__E5-E9_Min__35-44YO_AllRg  |
| 194          | 8               | 26          | 13.40       | 208 CG__E5-E9_Min__44+YO__US+TER  |
| 1,231        | 215             | 519         | 42.20       | 209 CG__O1-O3_NonM_18-34YO_AllRg  |
| 687          | 119             | 366         | 53.30       | 210 CG__O1-O3_NonM_35+YO_AllRg    |
| 419          | 74              | 167         | 39.90       | 211 CG__O1-O3_Min__All__AllRg     |
| 1,979        | 347             | 1,141       | 57.70       | 212 CG__O4-O6_NonM_30+YO__AllRg   |

**Table A1. (continued)**

| <b>Stratum Size</b> | <b>Allocation Size</b> | <b>Sample Size</b> | <b>Pct Sampled</b> | <b>Label</b>                    |
|---------------------|------------------------|--------------------|--------------------|---------------------------------|
| 338                 | 60                     | 163                | 48.20              | 213 CG__O4-O6_Min__30+YO__AllRg |
| 17,567              | 1,438                  | 4,942              | 28.10              | 214 All Warrant Officers        |



**Appendix B.**  
**Allocation Solution for Reporting Domains**



**Table B1.**  
***Allocation Solution for Reporting Domains***

| <b>Domain</b> | <b>Label</b>              | <b>Population</b> | <b>HWCI</b> | <b>Allocation</b> | <b>Estimated<br/>n</b> | <b>Pct<br/>Sampled</b> | <b>Design<br/>Effect</b> |
|---------------|---------------------------|-------------------|-------------|-------------------|------------------------|------------------------|--------------------------|
| 1             | All Domains               | 799,606           | 0.01        | 12,847            | 49,290                 | 6.27                   | 1.91                     |
| 2             | Army                      | 317,997           | 0.02        | 4,534             | 18,590                 | 5.96                   | 1.87                     |
| 3             | Navy                      | 169,144           | 0.03        | 2,218             | 8,351                  | 5.01                   | 1.63                     |
| 4             | Marine Corps              | 94,200            | 0.03        | 1,693             | 6,553                  | 7.11                   | 1.81                     |
| 5             | Air Force                 | 193,311           | 0.02        | 2,777             | 10,281                 | 5.39                   | 1.66                     |
| 6             | Coast Guard               | 24,954            | 0.03        | 1,625             | 5,520                  | 22.41                  | 1.47                     |
| 7             | Enlisted                  | 632,267           | 0.01        | 7,478             | 34,048                 | 5.48                   | 1.57                     |
| 8             | Officer                   | 167,339           | 0.02        | 5,369             | 15,255                 | 9.25                   | 2.15                     |
| 9             | E1-E4/Unkn                | 216,674           | 0.02        | 2,472             | 14,056                 | 6.64                   | 1.55                     |
| 10            | E5-E9                     | 415,593           | 0.02        | 5,006             | 19,970                 | 4.87                   | 1.58                     |
| 11            | W1-W5                     | 17,567            | 0.03        | 1,438             | 4,878                  | 28.13                  | 0.94                     |
| 12            | O1-O3                     | 73,151            | 0.03        | 1,809             | 4,717                  | 6.54                   | 1.80                     |
| 13            | O4-O6                     | 76,621            | 0.03        | 2,122             | 5,666                  | 7.52                   | 2.06                     |
| 14            | Non-Hispanic<br>White/Unk | 541,344           | 0.01        | 9,044             | 32,013                 | 6.02                   | 1.94                     |
| 15            | Minority                  | 258,262           | 0.02        | 3,803             | 17,281                 | 6.79                   | 1.85                     |
| 16            | US &<br>Territories       | 714,885           | 0.01        | 8,628             | 32,430                 | 4.61                   | 1.57                     |
| 17            | Overseas                  | 84,721            | 0.02        | 4,219             | 16,756                 | 20.28                  | 1.39                     |
| 18            | CONUS                     | 656,031           | 0.01        | 7,860             | 29,537                 | 4.57                   | 1.68                     |
| 19            | OCONUS                    | 143,406           | 0.03        | 4,984             | 19,681                 | 14.02                  | 3.97                     |
| 20            | Army*Enlisted             | 252,972           | 0.02        | 2,724             | 13,135                 | 5.30                   | 1.52                     |
| 21            | Army*Officer              | 65,025            | 0.04        | 1,810             | 5,463                  | 8.53                   | 2.58                     |
| 22            | Navy*Enlisted             | 133,632           | 0.03        | 1,303             | 5,903                  | 4.48                   | 1.40                     |
| 23            | Navy*Officer              | 35,512            | 0.04        | 915               | 2,446                  | 7.01                   | 1.33                     |
| 24            | Marine<br>Corps*Enlisted  | 79,893            | 0.04        | 921               | 4,459                  | 5.71                   | 1.33                     |
| 25            | Marine<br>Corps*Officer   | 14,307            | 0.04        | 772               | 2,104                  | 14.90                  | 1.12                     |
| 26            | Air<br>Force*Enlisted     | 146,988           | 0.03        | 1,844             | 7,781                  | 5.37                   | 1.64                     |

**Table B1. (continued)**

| <b>Domain</b> | <b>Label</b>                | <b>Population</b> | <b>HWCI</b> | <b>Allocation</b> | <b>Estimated<br/>n</b> | <b>Pct<br/>Sampled</b> | <b>Design<br/>Effect</b> |
|---------------|-----------------------------|-------------------|-------------|-------------------|------------------------|------------------------|--------------------------|
| 27            | Air<br>Force*Officer        | 46,323            | 0.04        | 933               | 2,500                  | 5.47                   | 1.35                     |
| 28            | Coast<br>Guard*Enlisted     | 18,782            | 0.04        | 686               | 2,774                  | 14.95                  | 0.99                     |
| 29            | Coast<br>Guard*Officer      | 6,172             | 0.04        | 939               | 2,742                  | 45.09                  | 1.37                     |
| 30            | Male                        | 706,172           | 0.01        | 11,477            | 43,659                 | 6.29                   | 2.14                     |
| 31            | Female                      | 93,434            | 0.05        | 1,370             | 5,631                  | 6.13                   | 3.28                     |
| 32            | US*18-24<br>Years Old       | 150,182           | 0.03        | 1,189             | 6,869                  | 4.69                   | 1.16                     |
| 33            | US*25-29<br>Years Old       | 185,885           | 0.03        | 1,853             | 7,557                  | 4.11                   | 1.36                     |
| 34            | US*30-34<br>Years Old       | 142,320           | 0.03        | 1,839             | 6,232                  | 4.42                   | 1.63                     |
| 35            | US*34-44<br>Years Old       | 196,774           | 0.02        | 2,969             | 9,292                  | 4.82                   | 1.83                     |
| 36            | US*45+ Years<br>Old         | 39,724            | 0.05        | 777               | 2,468                  | 6.32                   | 2.07                     |
| 37            | Overseas*18-24<br>Years Old | 14,419            | 0.04        | 807               | 4,394                  | 33.02                  | 1.17                     |
| 38            | Overseas*25-29<br>Years Old | 21,760            | 0.04        | 726               | 3,261                  | 15.13                  | 1.05                     |
| 39            | Overseas*30-34<br>Years Old | 18,151            | 0.04        | 746               | 2,741                  | 15.22                  | 1.08                     |
| 40            | Overseas*34-44<br>Years Old | 25,307            | 0.04        | 1,035             | 3,211                  | 12.95                  | 1.49                     |
| 41            | Overseas*45+<br>Years Old   | 5,084             | 0.04        | 905               | 3,028                  | 60.66                  | 1.32                     |
| 42            | Coast Guard                 | 24,954            | 0.03        | 1,625             | 5,520                  | 22.41                  | 1.47                     |
| 43            | Total DOD                   | 774,652           | 0.01        | 11,222            | 43,787                 | 5.75                   | 1.77                     |

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